



# UNITED STATES PATENT AND TRADEMARK OFFICE

*len*  
UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,188	07/08/2003	Richard L. Sutherland	SAIC0078	7745

27510 7590 03/20/2007  
KILPATRICK STOCKTON LLP  
607 14TH STREET, N.W.  
WASHINGTON, DC 20005

EXAMINER
----------

ROSENBERGER, RICHARD A

ART UNIT	PAPER NUMBER
----------	--------------

2877

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/20/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/614,188

Applicant(s)

SUTHERLAND ET AL.

Examiner

Richard A. Rosenberger

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 6-14, 17-28 and 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy et al (US 5,864,641) in view of Batchelder et al (US 4,844,613), Ridgeway et al (US 5,377,008) and Lading et al (US 6,493,090).

Murphy et al shows a sensor for determining the presence of a target agent comprising "detection module" which comprises a grating on a waveguide with a active material that reacts with the agent of interest and causes a change in an optical parameter of the material which can be measured by changes in the manner in which light interacts with the grating. A fluid sample which may contain the agent of interest is passed to the active material where "a chemical bond is formed between the target site and a specific molecule" (column 5, lines 62-65); thus the target molecule (the "agent") is "trapped" by the chemical bond in the material, and thus the active material constitutes a filter that filters the sample in the sense the term "filter" is used in the claim.

Murphy does not appear to teach using a reference against which to compare the measurement from the active site. This use of a reference is well-known in the art; see, for example, Batchelder; see column 3, lines 14-24, which describes the known use of a

reference measuring path in addition to the sample measuring path, in which the reference path does not have the detection molecules. It would have been obvious to use such a reference site for the reasons in the art such references are commonly used, such as the increased accuracy due to the cancellation of effects that are common to the two paths, leaving the measured result "due solely to specific binding effects", as mentioned by Batchelder in column 3, lines 20 and 21. See also the use of a reference in Ridgeway (column 8, lines 10-34, discussing how this allows for cancellation of non-specific effects), and Lading et al (column 12, lines 39-46).

As also taught by Ridgeway et al, it is known in the art to form a reference site by providing a material like that of the active measurement area but without the active material; see Ridgeway et al, column 8, lines 16-23, which discloses effectively removing the active material from the reference area. It would have been obvious to form the active area in this manner for the reasons of the Ridgeway reference as set forth in column 8, lines 23-27 of canceling all nonspecific effects. See also Lading et al, column 12, lines 43-46.

The use of any type of known gratings, including Bragg gratings, which will be sensitive to changes in the optical characteristics of the active material would have been obvious.

Providing any suitable arrangement for providing the sample fluid to the active material, including micro-fluidic systems, would have been obvious; micro-fluidic systems would have been obvious because this would minimize the amount of the sample fluid needed for the detection; see, for a single example, Lading et al, column 8,

lines 23-33, which notes that as of the filing of the application that became that patent the “fluid handling in such devices is usually based on microfluidics”.

In the system of Murphy the optical characteristic may be index of refraction; see column 7, lines 5-7.

Making the waveguides of any suitable material would have been obvious.

As in claim 6, any fair reading of the Murphy et al patent would have the sample being tested being a “fluid”; see figure 4 of Murphy et al, for example. If the particular material being tested for is to be actually detected, the material must have been introduced into the detection module. As in claim 7 and 13, in actual use, recalculating the fluid would have been obvious because this would save on the resources that never reusing the fluid would impose on the use of the device.

3. Claims 4-5, 15-16 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy et al (US 5,864,641) in view of Murphy et al (US 5,864,641) in view of Batchelder et al (US 4,844,613), Ridgeway et al (US 5,377,008) and Lading et al (US 6,493,090) as applied to the claims above, and further in view of the acknowledged prior art on page 23, paragraph [0083].

The instant specification mentions that the formation of Bragg gratings by holographically polymerizing a polymer dispersed liquid crystal material in known, and supports the disclosure of this claimed manner or making the grating by reference to issued U.S. patents. It would have been obvious to form the grating in this known manner because this is a known manner of forming the gratings.

4. The remarks filed 29 December 2006 have been considered, but have not been found to be persuasive.

The remarks argue that the system of Murphy et al uses underlying reactions “none of which include the binding process of the claims” [remarks, page 11, line 1]. In particular, the remarks argue, based upon a discussion of prior art in the Murphy et al reference, that Murphy et al “teaches away” from such binding. This, however, does not appear to be the case.

The instant disclosure uses “an enzyme, a protein, an antibody, or an antigen” as the detector molecule (page 24, lines 10-11, in paragraph [0083]). As described in column 6, line 5, Murphy et al teaches the use of antibodies as the detector material.

The instant invention appears to use a change in the index of refraction of the detection material; see, for example, the instant specification, page 29, line 1, in paragraph [0094]. This change in index of refraction is also used by Murphy et al; see column 7, lines 1 and 2 of that reference.

Thus it is not clear what the argued difference between the binding of the instant invention and that of the Murphy reference is.

As for the argument of the remarks that Murphy et al “teaches away” based upon the comments concerning the Tran et al system in column 3 of the reference, note the further comments in Murphy et al concerning the Tran et al reference in column 8, lines 2-9, which relates the earlier noted defects in the Tran et al system is not because of the use of antibodies per se, and that the Murphy et al invention uses such antibodies.

5. It is noted that in the instant specification embodiments of the system is described as using Bragg grating that are porous, with the detection molecules held within the porous Bragg gratings; see as a few examples, page 6, lines 6-7 in paragraph [0017] and lines 11-12 in paragraph [0018]; page 14, line 18 in paragraph [0063]; and page 22, line 15-16 in paragraph [0081]. It would appear that this is not taught by the reference and if claimed sufficiently clearly would be allowable. None of the instant claims, however, appear to clearly set this feature forth. It may be that the grating of claims 5 and 15 are inherently porous, but this is not clear as claimed, and it may be that overall structure of these claims, dependent as they are, may also include an inherent feature that the detection molecules are dispersed within the porous gratings, but again this is not clear as currently claimed.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

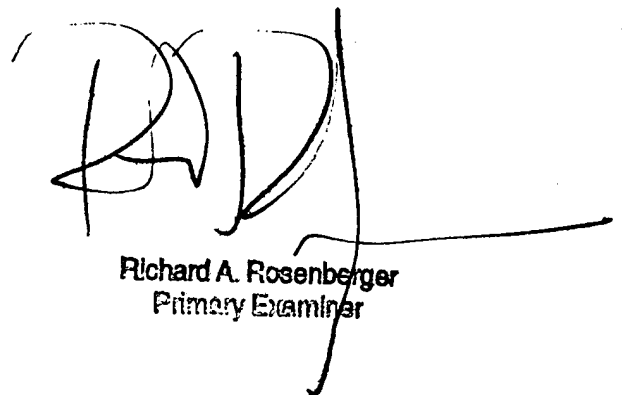
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard A Rosenberger whose telephone number is (571) 272-2428. The examiner can normally be reached on Monday through Friday during the hours of 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

Art Unit: 2877

supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

R. A. Rosenberger  
14 March 2007



Richard A. Rosenberger  
Primary Examiner